

- 26 -

What is claimed is:

1 1. A printhead for ejecting drops of a fluid onto a medium during movement along
2 a scanning axis, comprising:

3 a plurality of chambers for controllably ejecting the drops;

4 a nozzle member attached to the printhead and defining a wall of each of the
5 chambers, the nozzle member having a planar surface positionable adjacent the medium;

6 and

7 a plurality of nozzles formed in the nozzle member and in fluidic communication
8 with each chamber, wherein certain ones of the nozzles have a nozzle axis tilted along the
9 scanning axis.

1 2. The printhead of claim 1, wherein the nozzle axis is tilted so as to deposit during
2 a single fluid deposition operation a main drop and at least one satellite drop from an
3 individual one of the plurality of nozzles in substantially the same location on the medium.

1 3. The printhead of claim 1, wherein the nozzle axis is tilted so as to deposit during
2 consecutive fluid deposition operations drops from an individual one of the plurality of
3 nozzles substantially along a printing axis parallel to the scanning axis.

1 4. The printhead of claim 1, wherein the planar surface is positioned generally
2 parallel to a surface of the medium being printed.

- 27 -

1 5. The printhead of claim 1, wherein the planar surface is coplanar with a printing
2 plane of the medium.

1 6. The printhead of claim 1, wherein the certain ones of the nozzles have a non-
2 circular bore through the nozzle member.

1 7. The printhead of claim 1, wherein the nozzle axis is tilted between 0.2 degrees
2 and 1.4 degrees from vertical.

1 8. The printhead of claim 6, wherein the bore has the shape of a figure-8.

1 9. The printhead of claim 6, wherein the nozzle axis is tilted between 0.4 degrees
2 and 0.9 degrees from vertical.

1 10. The printhead of claim 6, wherein the non-circular bore is symmetrical about
2 the scanning axis but asymmetrical about a medium advance axis orthogonal to the
3 scanning axis.

1 11. The printhead of claim 10, wherein the bore has the shape of a cashew.

1 12. The printhead of claim 10, wherein the bore has the shape of a lopsided figure-
2 8.

1 13. The printhead of claim 10, wherein the bore has the shape of a pie with a
2 wedge removed.

1 14. The printhead of claim 1, wherein the plurality of nozzles are grouped into a
2 set of odd nozzles and a set of even nozzles, and wherein the nozzle axes of each of the
3 odd nozzles and each of the even nozzles are tilted in the same direction along the
4 scanning axis.

1 15. The printhead of claim 1, wherein the plurality of nozzles are grouped into a
2 set of odd nozzles and a set of even nozzles, and wherein the nozzle axes of each of the
3 set of odd nozzles is tilted in one direction along the scanning axis and the nozzle axes of
4 each of the set of even nozzles is tilted in an opposite direction along the scanning axis.

1 16. The printhead of claim 1, wherein the drops of the fluid are ejected at
2 substantially the same firing frequency during movement in both a forward and a rearward
3 direction along the scan axis.

1 17. The printhead of claim 1, wherein the composition of the nozzle member is
2 substantially uniform.

1 18. The printhead of claim 1, further including:
2 a supply of a fluid fluidically coupled to the plurality of chambers.

1 19. The printhead of claim 18, wherein both the supply of the fluid and the
2 printhead are mounted in a print cartridge moveable along the scanning axis.

- 29 -

1 20. The printhead of claim 18, wherein the printhead is mounted in a print
2 cartridge moveable along the scanning axis and fluidically coupled to the supply of the
3 fluid positioned in a different location.

1 21. An inkjet printer, comprising:

2 a frame;

3 a carriage attached to the frame for relative motion with respect to a print medium
4 in oscillating scans along a scan axis;

5 at least one printhead mounted to the carriage for controllably depositing drops of
6 an ink on the print medium during the relative motion, the at least one printhead further
7 having

8 a plurality of chambers for controllably ejecting the drops,

9 a nozzle member attached to the printhead and defining a wall of each of the
10 chambers, and

11 a plurality of nozzles formed in the nozzle member and in fluidic communication
12 with each chamber, the nozzles having a nozzle axis tilted in the direction of the scan axis.

1 22. The inkjet printer of claim 21, further including:

2 a print controller operatively coupled to the at least one printhead for controlling
3 the depositing of the drops of the ink on the print medium.

1 23. The inkjet printer of claim 22, further including:

- 30 -

2 a printmode utilized by the print controller and defining an interrelationship
3 between movement of the carriage and the depositing of the drops of the ink such that the
4 drops of the ink are deposited when the carriage is moving in only a given one of a
5 forward and a rearward scan direction and not in an opposite one of the forward and the
6 rearward scan directions, and the print medium is moved along a medium advance axis
7 orthogonal to the scan axis after each traversal of the carriage in the given scan direction
8 and the opposite scan direction.

1 24. The inkjet printer of claim 22, further including:
2 a printmode utilized by the print controller and defining an interrelationship
3 between movement of the carriage and the depositing of the drops of the ink such that the
4 drops of the ink are deposited both when the carriage is moving in a given one of a
5 forward and a rearward scan direction and in an opposite one of the forward and the
6 rearward scan directions, and the print medium is moved along a medium advance axis
7 orthogonal to the scan axis after each traversal of the carriage in the given scan direction
8 and the opposite scan direction.

1 25. A method for depositing drops of an ink on a medium with an inkjet printer,
2 comprising:
3 providing a printhead mountable in the inkjet printer and moveable along a
4 scanning axis, the printhead having a plurality of ink ejection nozzles each having a bore
5 axis tilted along the scanning axis;

- 31 -

6 moving the printhead relative to the medium along the scanning axis;
7 while moving, controllably ejecting a main drop from selected ones of the nozzles
8 toward the medium in a first trajectory; and
9 in response to the ejecting the main drop, ejecting a satellite drop from the selected
10 ones of the nozzles toward the medium in a second trajectory, the first trajectory and the
11 second trajectory having substantially no drop placement error in a medium advance
12 direction orthogonal to the scanning direction.

1 26. The method of claim 25,
2 wherein the scanning axis has a first scanning direction, and a second scanning
3 direction opposite to the first scanning direction;
4 wherein each bore axis of the plurality of ink ejection nozzles is tilted toward the
5 first scanning direction; and
6 wherein the moving includes moving the printhead in the second scanning direction
7 such that the main drop and the satellite drop from substantially all the ink ejection nozzles
8 coincide on the medium.

1 27. The method of claim 25,
2 wherein the scanning axis has a first scanning direction, and a second scanning
3 direction opposite to the first scanning direction;
4 wherein each bore axis of a first subset of the plurality of ink ejection nozzles is
5 tilted toward the first scanning direction;

- 32 -

6 wherein each bore axis of a second subset of the plurality of ink ejection nozzles is
7 tilted toward the second scanning direction;

8 wherein the moving includes moving the printhead in the second scanning direction
9 such that the main drop and the satellite drop from substantially all the first subset of ink
10 ejection nozzles coincide on the medium; and

11 wherein the moving includes moving the printhead in the first scanning direction
12 such that the main drop and the satellite drop from substantially all the second subset of
13 ink ejection nozzles coincide on the medium.

1 28. The method of claim 27,
2 wherein the first subset are odd-numbered nozzles; and
3 wherein the second subset are even-numbered nozzles.

1 29. The method of claim 27,
2 wherein the first subset are even-numbered nozzles; and
3 wherein the second subset are odd-numbered nozzles.

1 30. The method of claim 25, wherein the ejecting a main drop and the ejecting a
2 satellite drop are performed repeatedly with consistent first and second trajectories.

1 31. The method of claim 26, further including:

- 33 -

2 advancing the medium relative to the printhead in a medium advance direction
3 orthogonal to the scanning direction after the moving the printhead in the second scanning
4 direction; and
5 moving the printhead in the first scanning direction without ejecting the main drop
6 or the satellite drop.

1 32. The method of claim 27, further including:

2 advancing the medium relative to the printhead in a medium advance direction
3 orthogonal to the scanning direction after the moving the printhead in the second scanning
4 direction and the moving the printhead in the first scanning direction.

1 33. A printhead, comprising:

2 a plurality of chambers for controllably ejecting drops of a fluid onto a medium;
3 a nozzle member attached to the printhead and defining a wall of each of the
4 chambers; and

5 a plurality of nozzles formed in the nozzle member and in fluidic communication
6 with corresponding ones of the plurality of chambers, wherein certain ones of the nozzles
7 have a non-circular bore through which a main drop and at least one satellite drop are
8 sequentially deposited onto the medium during a single ink ejection operation.